APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/750,221	12/29/2000	Sung-Chun Jun	P 275721 P00H9026/US/ky	6597

		EXAMINER
909 7590 06/15/2004		TUCKER, WESLEY J

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ART UNIT	PAPER NUMBER
2623	

DATE MAILED: 06/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

		Application No.	Applicant(s)
Office Action Summary		09/750,221	JUN, SUNG-CHUN
		Examiner	Art Unit
		Wes Tucker	2623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>05 April 2004</u>.

2a)☒ This action is **FINAL**.　　　　2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>6-12</u> is/are pending in the application.

　　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>6-12</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a)☒ All　b)☐ Some * c)☐ None of:

　　　1.☒ Certified copies of the priority documents have been received.

　　　2.☐ Certified copies of the priority documents have been received in Application No. _____.

　　　3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

　　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
　　Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
　　Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Response to Amendment

1.   Applicant's response to the last Office Action, filed April 5, 2004 has been entered and made of record.

2.   Applicant has canceled claims 1-5, amended Claims 6-8, and added Claims 11 and 12. Claims 6-12 are pending.

3.   Applicant's arguments have been fully considered but are not persuasive for at least the following reasons:

4.   Applicant argues that the reference of Li does not disclose compensating for defective pixels, but only compensates for the luminance overshoot when the pixels have been enhanced. The luminance overshoot is interpreted as a measure of defectiveness of the pixel and therefore still reads on the claims.

5.   Applicant further argues that the reference of Li does not disclose a first-line memory, a second line memory, or a two-dimensional space filter. Examiner refers Applicant to the discussions of claims 2 and 7 from the first office action. Further as defined in the specification it is unclear what is defined as a line or set of lines. On page 6, lines 2-6, a first set of lines is referred to as P11, P12, and P13, a second set of lines is referred to as P21, P22, and P23, and a third set of lines is referred to as P31, P32, P33. This is confusing because P22 is also referred to as the target pixel. So from

these definitions a line P22 is equivalent to a pixel P22. The rejection of claims 6-10 is

maintained and claims 11 and 12 are also rejected and the action is therefore made

final.

Claim Rejections - 35 USC § 102

6.   The following is a quotation of the appropriate paragraphs of 35

U.S.C. 102 that form the basis for the rejections under this section made in this Office

action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

7.   Claims 6-10 and 12 are rejected under 35 U.S.C. 102(e) as being

anticipated by U.S. Patent 6,453,068 to Li.

8.   With regard to claim 6, Li discloses an apparatus, for use with an image

sensor having an array of pixels each of which outputs digital image data corresponding

to one or more characteristics of light incident thereon (column 1, lines 55-62), for

detecting and compensating for a defective pixel, comprising:

A defective pixel detecting circuit constructed and arranged to determine whether

a target pixel is defective based on a check condition (column 2, lines 5-15).

Li further discloses a compensation circuit constructed and arranged to compensate the image data of a target pixel deemed to be defective and outputting compensated image data (column 2, lines 10-15), wherein the defective pixel compensation circuit includes:

A two-dimensional space filter (column 6, lines 1-5) for receiving the image data fed thereto from a second line memory (column 5, lines 7-11), the image data inputted into the second line memory, the image data provided to the first line memory from each pixel on a line-by-line basis (column 4, lines 53-56), and respectively storing each of the digital image data in a first set of lines, a second set of lines, and a third set of lines.

A scanner, which scans line by line, is disclosed along with a storage device or memory. The digital image signals are transferred from the scanner to the image-processing unit for processing which inherently contains a second line memory. A third set of lines stored in memory would be inherent for storing the image pixel data once the pixel data has been modified. Also as the lines are discloses in the specification, they appear to be a simple array of pixels, which is well known in the art to store pixels or lines as arrays of pixels in memory.

Li discloses the use of a dedicated circuit or any other suitable electronic circuit means (column 5, lines 13-16).

9.   With regard to claim 7, Li discloses an apparatus according to claim 6, wherein in the defective pixel circuit <u>further comprises</u> a defective pixel determination circuit constructed and arranged to receive the image data provided thereto from the

space filter, determine whether or not image data of a target pixel is defective based on

the check condition (column 2, lines 5-15), and outputting a defective pixel

determination signal, a minimum range violation signal and a maximum range violation

signal according to determined results (column 2, lines 10-15), wherein the defective

pixel determination signal represents that the image data of the target pixel has a value

larger than the first coefficient times a maximum value of image data of adjacent normal

pixels in the space filter (column 6, lines 29-35), or a value smaller than the second

coefficient times a minimum value of image data of adjacent normal pixels in the space

filter (column 6, lines 44-50), the maximum range violation signal representing that the

image data of the target pixel has a value larger than the first coefficient times the

maximum value; and the minimum range violation signal representing that the image

data of the target pixel has a value smaller than the second coefficient times the

minimum value (column 2, lines 10-15). Here once it is determined whether the pixel

value is above the maximum or below the minimum value a signal is received indicating

an overshoot reduction coefficient for reducing or increasing the pixel value accordingly.

10.   With regard to claim 8, Li discloses an apparatus according to claim 7,

wherein the defective pixel compensation circuit includes means for combining the

minimum range violation signal and the maximum range violation signal provided

thereto from the defective pixel detection circuit (column 2, lines 7-14). Here an input

overshoot reduction is received which is either a negative or a positive value depending

on whether the pixel value was above or below the designated threshold. So this is

effectively giving one range violation signal just with a positive or negative sign

indicator.

Li further discloses a first selector constructed and arranged to selectively output

the minimum <u>value of</u> image data or the maximum <u>value of</u> image data in response to

output from the combining logic (column 2, lines 5-14). The overshoot coefficient is

output depending on the known local maximum or minimum values.

And a second selector constructed and arranged to select one of the output

signals from the first selection means and the image data of the target pixel, in response

to the defective pixel determination signal from the defective pixel determination means,

and outputting the same as the compensated image data (column 2, lines 15-25). Here

the pixel value is adjusted according to whether the pixel value is above a maximum or

below a minimum value in response to determining if the pixel is defective.

Li further discloses the condition that if the image data of the target pixel has a

value larger than the first coefficient of the maximum image data and is determined as

the defective pixel, the maximum wage data is outputted as the compensated image

data; and if the image data of the target pixel has a value smaller than the second

coefficient of the minimum image data and is determined as the defective pixel, the

minimum image data is outputted as the compensated image data (column 2, lines 43-

46 and column 7, lines 30-35 and column 9, lines 21-25). Here the method for

outputting compensated image data is disclosed using an overshoot attenuation

coefficient that can be changed according to the level of control desired. Factors of

0.25, 0.5, and 0.75 are all mentioned as attenuating the overshoot amount by 25%,

50%, and 75% respectively compensating the range violation degrees by these

amounts of the actual range violation. The factor of 1.0 would be used to bring a

positive overshoot amount to the maximum threshold value to be output or a negative

overshoot amount to the minimum threshold value to be output.

11.   With regard to claim 9, Li discloses an apparatus according to claim 8,

wherein the first and the second coefficients are selected based on process

characteristics of the image sensor (column 2, lines 5-7). The first and second

coefficients represent maximum and minimum values of adjacent pixels in the image. It

is inherent that they are selected based on process characteristics of the image sensor.

Whatever the image sensor senses will be used as the image data used to determine

the minimum and maximum values of the pixels surrounding a target pixel.

12.   With regard to claim 10, Li discloses an apparatus according to claim 8,

wherein the first and the second coefficients are 1.1 and 0.9, respectively (column 2,

lines 5-10). Here coefficients are interpreted as threshold values as described in the

claims above and with the specification. It is understood from the reference of Li that

maximum and minimum values can be assigned as appropriate and as discussed in

claim 3, the minimum and maximum values and the corresponding overshoot

coefficients can be assigned for any number of percentage values.

13.   With regard to claim 12, Li discloses an apparatus according to claim 8,

wherein the defective pixel determination signal represents that the target pixel is

defective and the minimum and maximum range violation signals represent that the

image data of the target pixel violates the minimum and maximum ranges in the check

condition respectively, which are provided thereto from the defective pixel defection

circuit (column 7, lines 18-35).

Claim Rejections - 35 USC § 103

14.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for

all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S.

Patent 6,453,068 to Li.

15.   With regard to claim 11, Li discloses an apparatus according to claim 6,

wherein the two-dimensional space filter is 5x5 (column 5, lines 65-68 and column 6,

lines 5-10). Li does not disclose a 3x3 filter explicitly. 3x3 filters are well known in the

art for use in pixel operations. Examiner takes official notice. Li gives an example of a

5x5 filter and teaches that any size or shape filter may be used. Therefore, it would

have been obvious to one of ordinary skill in the art at the time of invention to use a 3x3

filter in place of the 5x5 filter offered by Li because any size or shape filter may be used according to need.

Conclusion

16.   Applicant's amendment necessitated the new grounds of rejection presented in the Office Action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wes Tucker whose telephone number is 703-305-6700. The examiner can normally be reached on 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Amelia Au can be reached on (703) 308-6604. The fax phone number for

the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or

proceeding should be directed to the receptionist whose telephone number is (703) 305-

3900.

Wes Tucker
6-1-04

Jon Chang
Primary Examiner